

OBSERVATIONS ON *CEPHALOTUS* IN THE WILD

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In June and December, 1995, I had the pleasure of seeing *Cephalotus follicularis* (see Back Cover) in the wild at two sites on the south coast of Western Australia, near Albany and Walpole. At both sites, the plants were not obvious and would have been overlooked had I not been told that the plants grew there.

At the site near Albany, the plants grew on a low sandy bench at the foot of a wooded slope and near a sedge swamp. The plants were difficult to find, growing at the base of a thicket of thin, multiply branched shrubs which were up to 3 m tall. Here they grew under sedges and other herbs. The plants occurred in an area approximately 3 m long by 1 m wide and were identified by the glossy, ovate non-carnivorous leaves which were produced in greater abundance than the pitchers.

Approximately thirty rosettes grew at this site, many of which might be clones from the same root system. They had one to four ovate normal leaves and up to two pitchers each. The non-carnivorous leaves were up to 4 cm long and 2.5 cm wide and were generally held horizontally, perhaps to catch as much light as they could in this heavily shaded environment. The pitchers were up to 3 cm long, the majority of which were fully green; one pitcher with red pigment on its lid grew in a more open area. Many of the pitchers were partially to fully covered by the non-carnivorous leaves and also were partially buried by the thin layer of humus on the moist, sandy peat soil. In early June, the plants had no new growth (or at best very slow growing and immature growth emerging from their centres) but had several recently open to soon to open pitchers. In early December, all the plants had a new flush of pitchers and non-carnivorous leaves in various stages of development.

On my latest visit I opened one of the dying pitchers and investigated its diet (it was approximately six months old). It contained one purple isopod, or "slater," which was still intact and therefore appeared to have been recently caught; several small flies all less than 2 mm long; the chitinous remains of numerous black insects which probably included beetles and ants; and one white, worm-like insect larvae, approximately 2 cm long which was very much alive and feeding on this soup. There were two noticeable features of the plants at this site; the first was the lack of scapes and the other was the absence of a build up of dead *Cephalotus* leaves.

The second site, near Walpole, was visited in early summer and was very different. The plants grew on a cliffs at the back of a small and sheltered beach, in a peaty clay substrate through which fresh water was constantly flowing. In contrast to the other site, the plants grew in open areas amongst sedges and a few trees, and in this well lit conditions had abundant, brightly coloured pitchers and a few small non-carnivorous leaves. There were approximately ten mature plants in the area, consisting of low domes of pitchers up to 3 cm long. The plants were in active growth with pitchers and non-carnivorous leaves in numerous stages of growth. Many of these plants had scapes up to 30 cm tall, one of which had flowers which were a day or two from opening. Around the mature plants grew at least fifty red seedlings in an area of about 5 m². These plants had pitchers as large as 1.5 cm long, but most were smaller, perhaps indicating that they were less than a year old.

From discussions with Phill Mann who has visited many *Cephalotus* sites, it appears that this species grows in a cycle which lasts several years. *Cephalotus*

grows strongly after land disturbance and particularly after fire. Plants resprout from the unburned root system and produce abundant pitchers and flowers. Seedlings establish before competing vegetation does (particularly low, dense growing woody shrubs). After the woody competitors become dominant, *Cephalotus* declines in vigour and produces relatively more non-carnivorous leaves. The plants persist in this stage of slowed growth until the next fire. Both Phill Mann and Mark Stuart observed that in many swamps, elusive and hidden *Cephalotus* plants were most easily found by the sound of popping pitchers as the plants were stepped upon.

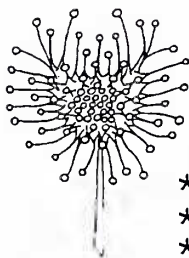
At both sites *Cephalotus* grew with other carnivorous plants, particularly the pink-petalled form of *Drosera pulchella*. At the site near Albany it also grew with or near *Drosera erythrorhiza* subsp. *erythrorhiza*, *D. erythrorhiza* subsp. *collina*, *D. pal-lida* and *D. neesii* subsp. *neesii*. At the site near Walpole the remains of *D. erythro-gyna* were found nearby.

With permission from the land owners I removed a few leaves from the plants near Albany. These were placed in *Sphagnum* moss and peat moss; the leaf in the peat moss rotted but the two in the *Sphagnum* moss remained green. By August they had developed small roots, by December small non-carnivorous leaves and a few pitchers emerged from the callus at the base of the petiole, by February the mature leaf died but the plantlet at the base was growing well.

The conservation status of *Cephalotus* is secure particularly in cultivation; it is now grown around the world and propagated by seed, leaf and root cuttings and tissue culture. In the wild this species is a robust survivor. Its taxonomic isolation suggests it probably has a long history. It has survived in the coastal plain where sea levels have varied between flooding all but the high ground of the isolated low granitic hills, to times when extensive sand dunes and sand sheets covered the land. In addition the plants have survived a climatic change, fire and most land disturbances. Phill has reported that plants generally survive collection by resprouting vigorously from root fragments left behind; and he has seen some spectacular plants regrowing from such disturbance. The biggest threats to this species in the wild appear to be extensive land clearing for agriculture (especially if fertiliser is used), and from poisoning from polluted water. Fortunately many *Cephalotus* sites are protected in National Parks, Reserves and on privately owned blocks.

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